Neurocounseling: Helping

Clients Achieve Allostasis

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Abstract

In this paper, the author synthesizes knowledge gained from reading a selection of articles regarding neurocounseling in the publication *Counseling Today*. She explains the neurobiology at work in interpersonal relationships and its effects on empathy. She also explores the way that adverse childhood experiences impact brain development and function. Additionally, the psychological and physical effects of stress and the production of cortisol are illustrated. The importance of facilitating self-regulation in clients to achieve allostasis is emphasized. She incorporates ethical and practical considerations counselors should consider while incorporating neuroscience into their clinical work.

Neurocounseling: Helping Clients Achieve Allostasis

Over the course of the last week, I have spent time reading about the topic of neurocounseling in the publication *Counseling Today*. I read articles related to the neurobiology in play when individuals encounter traumatic childhood experiences and the neuroscience related to interpersonal experience. I learned about how the hormone cortisol impacts the brain and body, and about important ethical considerations when integrating neuroscience into our work with clients. Over and over, one resonant point kept being made. It was that one of the most crucial undertakings of counseling is helping clients to self-regulate. With this comes the task of thoughtfully facilitating understanding of the physiological and psychological implications of the stress response.

Self-regulation can be understood by Robert Sapolsky’s concept of allostasis, which is “the constant and delicate adjustments the brain and body go through by assessing and deciding the physiological or behavioral adaptations needed to maintain our balance (Russel-Chapin & Jones, 2014, p. 21).” Throughout the day, a person encounters many types of stimuli in the environment. The individual’s nervous system may respond with overactivation or under-activation based on their individual wiring. Some clients made need stimulation, and some may need to learn strategies to calm down (Russel-Chapin & Jones, 2014). It is the counselor's role to help clients learn about their own brains and bodies and develop strategies to find their states of allostasis.

Based on many factors like genetics, exposure to adverse experiences, or through learning based on interpersonal relationships, individuals may develop maladaptive neurological responses to triggers in the environment that negatively affect their mental and physical health. A person must assess environmental input and determine whether or not it poses a threat. Depending on a person’s experiences and predispositions, they may be more likely to determine there is danger, even when there is not. This triggers the sympathetic nervous system (SNS), leading to an increase in the production of cortisol- based hormones in the hypothalamic-pituitary axis (HPA). The fight-flight response is a result of SNS activation, and bodily organs are signaled to react. Heart rate goes up, pupils dilate, digestive processes diminish, salivation decreases, and adrenaline and epinephrine are released. In contrast, the parasympathetic system (PNS) slows down the psychological processes, resulting in a slower heart rate, constricted pupils, and digestive ease seen in calm states. When individuals are repeatedly exposed to real or perceived threats, they increase their SNS responses and exposure to cortisol leading to psychological and physical difficulties (Bennett, 2019).

When individuals experience repeated exposure to stress in childhood, this can actually change the neurological structures and functions in their brains. These stressful or traumatic childhood experiences are known as adverse childhood experiences, or ACES. According to the Substance Abuse and Mental Health Services Administration (SAMHSA), ACEs include physical abuse, sexual abuse, emotional abuse, physical neglect, emotional neglect, intimate partner violence, a mother being treated violently, substance misuse within a household, mental illness in a household, parental separation or divorce, and having an incarcerated household member (Baldwin, 2018).  Exposure to multiple ACEs lead to increased life dysregulation and the risk of repeating early life traumas, substance abuse, behavioral problems, increased risk of disease, disability, and early mortality (Baldwin, 2018).

ACEs have the potential to permanently alter the stress response system which creates a situation where an individual may stay in a hyper-aroused state and not be able to return to allostasis. Those with PTSD have enlarged amygdalae, smaller prefrontal cortices, and may have reduced hippocampal volume (Baldwin, 2018). It is so important for counselors to understand the challenges that those exposed to repeated stress face. They encounter an uphill battle in the process of regulation because their stress-induced brain differences make cognitive processing, decision making, and PNS activation more difficult.

Counselors must work with clients to help them shift their sympathetic response and begin to engage the parasympathetic system in order to calm. Many strategies can be used to achieve this result, and with repeated practice, the brain can learn new responses to cope with stressful triggers. Some interventions that have been shown to facilitate the sympathetic-parasympathetic shift are breath work, neurofeedback, guided imagery, creative arts expression and narrative interventions (Baldwin, 2018). Exercise and mindfulness-based strategies have also been shown to help (Bennett, 2018). Although there are many interventions that have promise in helping dysregulated clients re-wire their brains to more easily return to a non-aroused state, counselors may have to collaborate with other professionals and tap into community resources. Clients may be simultaneously working with psychiatrists to receive medications that positively impact brain functioning. The counselor also may connect clients to positive experiences in the community like volunteer work to help them form new, positive social connections. Additionally, counselors should promote preventative practices in schools like social-emotional education and trauma informed education programs that help students build resilience and help adults learn how to model and facilitate this.

I previously touched on the social influences that contribute to a person’s ability to regulate, and I will now further explain. Humans are social by nature and their social relationships begin with their attachment to their caregivers as babies. A person’s ability to psychologically adapt through the lifespan relies on their ability to deal with complex social interactions. Many psychological disorders are marked by an impairment in social abilities. Counselors often work with clients to improve their communication skills and regulate negative responses that occur in the context of their intimate relationships (Pereira Coutinho, 2018). A study conducted by Pereira Coutinho showed that when couples discuss their negative interactions, they are more likely to trigger a SNS and HPA response than when discussing positive aspects of their relationships. This response becomes synchronized in one partner when it arises in the other, and often leads to an escalation in nervous system activation. This response may explain why those in conflict have a hard time empathizing with the other party, and may withdraw or shut down (Pereira Coutinho, 2018). This process further illustrates the importance to teach clients to regulate. They need to do this in order to think clearly and process information correctly, and also to understand and empathize with others.  Counselors’ own ability to regulate is also crucial, because just as individuals in couples mirror their partners’ nervous system responses, clients mirror and respond to theirs.

Now that I understand the benefits of integrating neuroscientific concepts such as self-regulation to achieve allostasis, I must ensure that I am doing this ethically and within my scope. Luke and Redekop wrote an article dedicated to ethical considerations in neurocounseling and made some crucial points. They wrote, “Neuroscience integration is demystifying and normalizing.” With psychoeducation about what is happening in clients’ brains and bodies, they can move from thinking about their struggles as a personal fault to more of a brain- based difficulty that can change (Luke & Redekop, 2016). Counselors should help clients remove narratives of shame or self-blame around their difficulties and move toward a more objective outlook that recognizes neuroplasticity. Luke and Redekop’s statement, “Neuroscience integration offers a reflection of the counseling relationship” emphasized that so much of the communication between counselor and client is non-verbal and outside of conscious awareness (2016). It is critical for a counselor to be aware of self-aware, empathetic, and present because neuroscience keeps providing evidence of the importance of an attuned counselor-client relationship.

The neurocounseling articles in *Counseling Today* provided me with valuable knowledge about the why and how of integrating brain-based science into counseling. I expanded my awareness of the effects of sympathetic nervous system (SNS) and hypothalamic-pituitary axis (HPA) activation in those who have experienced stress such as childhood traumas and interpersonal conflict. I concluded that a main goal of my work is to help individuals train their brains to more easily access allostasis. With the ability to self-regulate, they will be able to access the power of their executive function, more easily connect and empathize with others, and reduce their chances of acquiring stress induced illnesses. I also recognize that counselors should collaborate with other professionals, help clients access available community resources, and promote prevention and early intervention.

Appendix A

**Baldwin, D. dbaldwin@mail. bradley. ed. (2018). What new counselors need to know**

**about adverse childhood experiences. *Counseling Today*, *60*(8), 10–12. Retrieved from http://search.ebscohost.com.ezp.scranton.edu/login.aspx?direct=true&db=eue&AN=127887090&site=ehost-live**

This article defined adverse childhood experiences (ACES) and explained their effect on individual’s regulatory abilities, brain development and functioning, and health outcomes in adulthood. The author described implications for counselors in regard to prevention and treatment for those exposed to traumatic experiences or stressful environments.

The author explained that ACES are traumatic or stressful events that occur between birth and age 18 which may include abuse, neglect, intimate partner violence, substance abuse within a household, household metal illness, parent divorce, incarceration of a household member, and more. A strong correlation between experience of ACEs and increased dysregulation, the potential repetition of ACEs, increased risk of disease, disability, early death, substance abuse, and a variety of behavioral problems was found. Mental health disorders including PTSD, mood, anxiety, and behavior disorders are also associated with high ACE scores.

The article described the hormonal effects of stress and how this relates to ACEs. Stress activates the sympathetic nervous system (fight-flight response) and hypothalamic-pituitary-adrenal (HPA) axis, resulting in an increase in the production of cortisol. Generally, the parasympathetic system kicks in after this stress response and regulates a person back to their non-aroused baseline. The author explained that ACEs have the potential to alter the stress response system because repeated exposure to stress causes excess cortisol production to damage the HPA. In turn brain structures change, shrinking hippocampal and prefrontal cortex areas and enlarging the amygdala. These changes make it difficult for an individual to regulate back to a non- aroused state once activated. It also increases their likelihood of sympathetic activation when presented with internal and external stimuli. This chronic experience of stress is related to the prevalence of many diseases including heart disease, diabetes, asthma, depression, and other mental and physical health impairments.

The author wrote that the best treatments for activation of the HPA axis are those that focus on the “sympathetic-parasympathetic shift.” These include breath work, neurofeedback, guided imagery, creative arts expression, and narrative interventions focused on fostering autonomy and self-control. She also recommended activities like yoga, tai-chi, exercise, volunteering, and mindfulness activities like progressive muscle relaxation. She noted preventative approaches’ importance and recommended introducing intervention at the prenatal and primary care level. She recommended trauma informed practices in schools and teaching children skills such as self-control and resilience. Additionally, she stated the necessity to link people to community resources and utilize child protective services when necessary to help children and adolescents dealing with trauma related to ACEs.

**Bennett, C. M. . (2019). Cortisol and counseling: Connecting the two. *Counseling Today*,**

***61*(11), 14–17. Retrieved from**

**http://search.ebscohost.com.ezp.scranton.edu/login.aspx?direct=true&db=eue&AN=136268210&site=ehost-live**

In this article, the author discussed the importance of integrating neuroscientific knowledge into the counseling practice and emphasized the importance of educating clients on the physiological and psychological effects of stress. She explained the critical role that the hormone cortisol plays in the experience and expression of stress. She then identified specific phases in which the concept of cortisol can be integrated into counseling so that clients can identify how it is impacting them and create a plan to remedy this.

The author explained that when the brain perceives stress, whether that be real or imagined, it sends the message to the body that the person is in danger. The autonomic nervous system is responsible for initiating and stopping the stress response. When a threat is perceived, the sympathetic branch (SNS) of the autonomic nervous system activates, causing physiological changes such as increased heart rate, decreased appetite, release of adrenaline, and epinephrine. These changes can be seen in the fight-flight-freeze response. The parasympathetic branch of the autonomic nervous system is responsible for slowing down these responses and creates a calming effect. Additionally, the hypothalamic-pituitary- adrenal (HPA) axis releases cortisol-based hormones in response to stress. This can play a critical role in the development and preservation of mental health disorders such as depression and anxiety.

 High cortisol levels also weaken the immune system, create difficulties with menstrual cycles, and impair cognitive processing. On the flip side, cortisol works in a positive way to help individuals awaken in the morning and assists with fetal development. Some cortisol is needed, but increased levels cause both psychological and physical harm.

The author suggested that counselors educate clients about the effects of cortisol and identify how cortisol affects their own personal functioning paying attention to how their bodies, minds, and brains are impacted. She highlighted the cognitive process of rumination of negative thoughts and how these create the perception of threat in a person and increase cortisol production. Then she discussed strategies that clients can regularly practice to combat the negative effects of cortisol including physical exercise, mindfulness practices, and breathing exercises.

Individuals suffering with depression, anxiety, dissociation, and addiction experience difficulty in regulatory processes due to genetic predispositions, interpersonal experiences that patterned and engrained dysregulation, and changed brain structures and function due to chronic exposure to stress (Badenoch, 2008). Counselors must facilitate new patterns of response in these clients through empathetically engaging with them, educating them about their brains and bodies, fostering mindfulness, and using expressive techniques such as sand tray or art. It is also important to note that medication may be an important part of this process (Badenoch, 2008).  With a personalized and multifaceted approach, counselors will be able to help their clients re-wire and integrate their brains to function in a healthier and more adaptive way. They will see the changes in their perceived mental wellness and physical health.

**Luke, C. cluke@tntech. ed., & Redekop, F. redekop@kutztown. ed. (2016). Ethically**

**integrating neuroscience into counseling: Nine key considerations. *Counseling Today*, *58*(12), 14–17. Retrieved from http://search.ebscohost.com.ezp.scranton.edu/login.aspx?direct=true&db=eue&AN=115952783&site=ehost-live**

In this article, Luke and Redekop discuss nine key considerations that counselors can refer to in order to ensure that they are ethically integrating concepts of neuroscience into their counseling practice.

The first consideration read, “Neuroscience integration is metaphorical.” This means that when explaining the neurological basis of behavior, counselors may have to use metaphorical language. This will ensure that these abstract concepts can be translated into a more concrete one connected to the client’s knowledge and experience.

The next consideration stated, “Neuroscience integration with counseling is emergent and constructed.” This means that our interpretation of neurological processes is often very simplified and does not get into their actual nuance and complexity. It is important to understand when certain processes have been overly reduced and attempt to gain a more accurate understanding.

The third consideration was, “Neuroscience integration is intimidating… and it isn’t.” This statement’s explanation noted that counselors do not need to neuroscientists to integrate brain-based knowledge into their clinical practice. They can still use neurological knowledge to help individuals learn about their brain and bodily processes and capacity of the brain to change.

The next statement was, “Neuroscience integration is popular, empirical and philosophical.” This means that incorporating neuroscientific knowledge into counseling has empirical support and can be ethically and thoughtfully incorporated into counselors’ scope of practice.

Next the authors wrote, “Neuroscience integration is not a panacea,” meaning that is does not offer a miracle cure to all ailments as there are no shortcuts to therapy.

They then stated, “Neuroscience integration is demystifying and normalizing.” When a counselor explains the neuroscientific reasonings behind why a client may be feeling and acting a certain way, this normalizes their experience and provides comfort and hope.

Next, the authors wrote, “Neuroscience integration is best understood from the inside out.” They described how counselors often employ top down interventions that use more sophisticated regions of the brain to create change. These include cognitive behavior and rational-emotive therapy. They argue that assisting clients in managing more primitive brain functions such as their heart rate and breathing from a bottom-up approach, can assist them in thinking about their problems more clearly.

The authors continued by stating, “Neuroscience integration is theory validation and construction,” meaning that neuroscientific research supports the theory-based work that counselors do and can help construct new integrative theoretical models.

Last, they wrote, “Neuroscience integration offers a reflection of the counseling relationship.” Science provides evidence that counselors communicate with their clients both verbally and non-verbally, and that much of the impressions that they leave on their clients is done so outside of conscious awareness.

 With all of these considerations in mind, I find that the integration of neuroscience into counseling validates what counselors already do. It also provides exciting direction for growth in the practice. Counselors can use and share insights about the brain and behavior to help clients understand some of the reasons why they are experiencing difficulties in their emotional processing or interpersonal interactions. Then counselors can work with them to more precisely target areas of their brain and nervous systems based on their needs. Traditional counseling theories can still be used, but perhaps can be more thoughtfully employed. Additional techniques like biofeedback, and mindfulness, and yoga may be incorporated as their empirical support in brain science research grows.

**Pereira Coutinho, J. F. (2018). The interpersonal brain: What neuroscience tells us about**

**our ability to understand self and others. Counseling Today, 61(2), 16–18. Retrieved from http://search.ebscohost.com.ezp.scranton.edu/login.aspx?direct=true&db=eue&AN=132519872&site=ehost-live**

This article discussed the importance of social interactions in a person’s ability to adaptively move through their lifespan.  The author pointed out that a majority of psychological disorders involve interpersonal difficulties. Some of these are autism and antisocial disorder, social phobia, schizophrenia, depression, and anxiety. Counselors help clients improve their communication, deal with conflict, and regulate negative affective responses in intimate relationships.

The author’s research looked at real time neurological data regarding the central and peripheral nervous systems as subjects engaged in interpersonal interactions. She wanted to gain knowledge on the complex psychological process of empathy as individuals were engaged in emotional exchanges with their significant others. She studied couples because their relationships are often the most important in one's lifespan, rich with emotional interchange.

The author conducted a study on 43 couples in monogamous relationships. She collected physiological and behavioral data from the couples.

 In the first phase of this study, they discussed positive and negative aspects of their relationships. It was found that when couples discussed negative aspects of their relationships, they presented higher rates of autonomic arousal as measured by heart rate than when discussing positive interactions. They also showed more hypothalamic pituitary adrenal (HPA) axis activation as measured by their cortisol levels when discussing the negative aspects. This showed that negative interactions indicated a perceived threat and caused a strong autonomic and HPA response. Partners were also found to synchronize their physiological responses, especially when in negative exchanges.

In the second phase of the study, participants watched video vignettes from their phase one exchanges with their partners while in fMRI machines. Participants elaborated on both their own experiences and their partner’s perceived experiences while watching the positive and negative contents of the videos. Results of this phase seemed to support that the self-awareness task involved the more affective, embodied ventral brain pathway. The other condition involved the dorsal pathway which uses more abstract and cognitive information.

These findings have important implications for the field of counseling as adaptive social interactions are critical to individuals’ survival and wellbeing. Knowing that autonomic and hormonal activation increases in the context of negative interaction helps counselors understand the struggle to access empathy when engaged in conflict. This research notes that negative heightened arousal in one partner activates this response in the other. Then this feeds back to the original partner, escalating things further. Counselors should work with partners to regulate their physiological arousal. The author writes that this can be accomplished using cognitive strategies and with relaxation techniques. This is important because chronic elevated heart rate and increased cortisol levels have significant negative effects on both physical and mental wellness. The author noted the types of relationships that these findings are relevant to, which include the parent-child, teacher- student, counselor-client, and physician-patient dyads.

This research provides more evidence to a concept of counseling that I believe is one of the most important: We, as practitioners must learn to regulate our physiological and emotional responses, and we must help others learn to do this as well. I believe it is best to start learning these skills early by teaching parents how to model emotional regulation to their children. Social- emotional skills should be explicitly taught and modeled through school counseling programming. With effective preventative and psychoeducational exposure to both parents and children, these children will grow up to be better be able to positively engage with one another with increased empathetic understanding.

**Russell-Chapin, L. lar@fsmail. bradley. ed., & Jones, L. L. J. ed. (2014). Three truths of**

**neurocounseling. *Counseling Today*, *57*(3), 20–21. Retrieved from**

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 This article, written in September, 2014, introduced readers of *Counseling Today* to the concept of neurocounseling and highlighted three statements that illustrate the importance of integrating neuroscience into counseling practice. The authors Russell-Chappin and Jones defined the truths as follows:

 Counseling changes the brain. Counseling helps clients build new neuronal pathways.

 The brain is the final frontier in exploring and understanding what makes us tick (p. 20).

The authors explain that the National Institute of Health is on its way to devising a model of brain-based diagnosis, and that this will lead to recommendations of brain-based treatments. Resources have been allocated to fund brain research and integrate understanding of brain-behavior processes into clinical counseling practices.

 Counseling interventions have been shown to affect the neurobiology of the brain. The authors explain the important position counselors are in to integrate brain science into their daily work. The importance of this goal is shown through CACREP accreditation standards moving emphasis on neuroscientific influence on client’s development and the counseling process.

 Teaching clients strategies to self-regulate was emphasized as a critical goal, and the concept of allostasis was introduced to readers. Allostasis is a concept coined by Robert Sapolsky which explains the constant adjustments that the brain and body make in order to achieve a state of balance. Some individuals need to stimulate their levels of nervous system arousal to do this, and others may need calming.

The authors stated that this neurocounseling column will provide methods to achieve self- regulation and allostasis by tapping into information learned about the brain and behavior. This information will be applied to counseling applications. When individuals are better able to self- regulate, they show an increase in self efficacy, hope, and confidence.

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